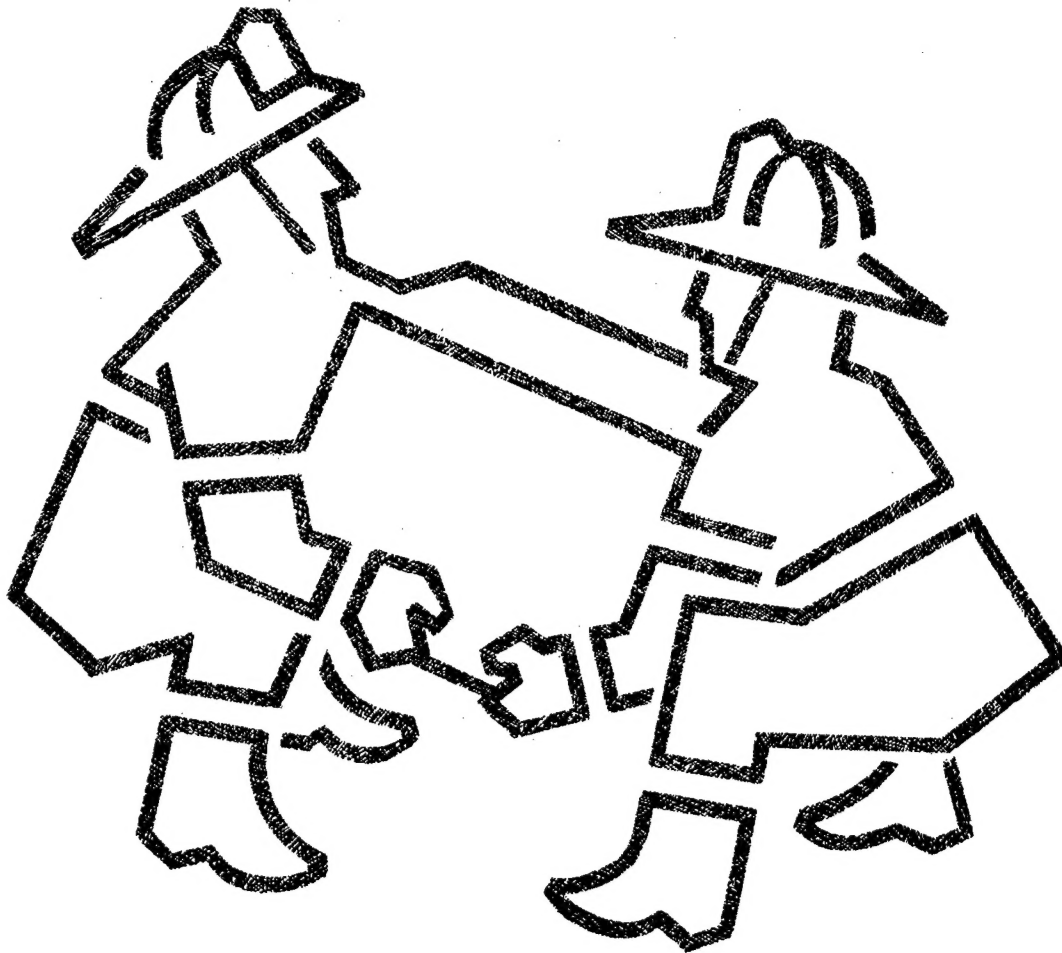


Back Injury Avoidance for Firefighters

1985



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BACK INJURY PREVENTION AID
FOR FIREFIGHTERS

Back injuries account for 30 percent of the injuries to firefighters. Firefighters are in the high-risk job series for back injuries--the number one type of civilian personnel injury.

This aid contains three items. The first is "Back Injury Avoidance Ideas for Fire Chiefs." This item presents several practical back injury prevention ideas for consideration by supervisory personnel in the fire prevention and protection organization. The second item is a poster series to be used to aid employee skill development and to present key points designed to motivate use of back injury prevention skills. The final item is a suggested back injury prevention lesson plan intended to be integrated in existing firefighter training programs.

These items are back injury prevention aids, not a back injury prevention program. Effective use of the ideas outlined in these aids coupled with the involvement of supervisors and individual firefighters can dramatically reduce the risk of back injuries. Comments and recommendations regarding firefighter safety procedures in general, or these items in particular, are solicited and should be sent to Commander, USASC, ATTN: PESCS, Fort Rucker, Alabama 36362.

BACK INJURY AVOIDANCE IDEAS FOR FIRE CHIEFS

Introduction

The fire chief as a manager and leader has the responsibility for the safety and welfare of his men. One of the most common, and in some ways the most serious, threats to that safety and welfare is back injury. The problem is a very serious one. Back injuries account for 30 percent of all injuries to firefighters and are capable of causing disability that can end a person's career as a firefighter. The fire chief can do a great deal to reduce the frequency and severity of back injuries. The following is a summary of these actions and how they can be efficiently and effectively carried out.

Training

Every firefighter should have the same expertise on the use and maintenance of his back that he has for any other key piece of firefighting equipment. The firefighter cannot be expected to naturally have this information. He certainly wasn't born with it and the odds are very high that he was never taught "Back Use and Maintenance I" in high school or college. The fire chief is responsible for training and back injury prevention. Use and maintenance of the back should be on the training schedule or plan with other key firefighting skills. A model lesson plan on which to base such training is in this packet.

Supervision

Once the firefighter knows the proper use of his back, it is a supervisory task to see that he uses the skills he has learned. No fire chief would tolerate abuse of hoses, pumps, or other key firefighting equipment. In the same sense, the proper use of the back should be stressed in maintenance, training, or actual firefighting. Correct wrong procedures and give a pat on the back for using the back correctly just as you would for other mission significant tasks.

Conditioning

Firefighting is an unusual job. It involves long periods of routine maintenance, training, and administrative tasks followed by periodic firefighting episodes that may demand the utmost in physical conditioning and produce mental stress that can amount to sheer terror. This kind of job makes physical conditioning an integral part of the job and physical training is a routine part of the firefighter's life. The wise fire chief will want to assure that the back is one of the focal points of his conditioning program on a permanent basis. Some suggested exercise procedures for the back, ranging from basic to advanced, have been included in this packet.

Personnel Management

Despite the utmost in precautions, in an occupation as hazardous as firefighting, there will be periodic injuries. The fire chief has a couple of key responsibilities related to these injuries. These include the following:

- Make sure, insofar as possible, that the injury was in fact an on-the-job injury. There are strong economic incentives for an employee to bring his off-duty injury to work and call it a job injury. Some discrete inquiries and, if circumstances are suspicious, perhaps a man-to-man discussion will surface the truth.

- Follow procedures established on your post to get a medical opinion on the degree of disability of the firefighter. Almost any injury will prevent a man from carrying out actual fighting of fires because of the risk of having a partially disabled man at a fire site. However, a review of a typical job description for a firefighter includes tasks such as inspecting, watch detail, alarm checker, and some maintenance and training tasks which could be performed by a man with a back injury or other injury. Of course, the decision is one for the doctor. The supervisor has to see that the doctor determines what a man can do and doesn't just decide that he shouldn't be asked to fight a fire and, therefore, he stays home.

- Meet the responsibility to request a medical evaluation of a man whose physical condition poses a risk to himself or others. Many men have firefighting in their blood and they will cover up or belittle a physical condition that should disqualify them. Such an action is of course against the interest of the Army and the firefighting function. It's up to the chief to bite the bullet and get the evaluation completed.

Summary

Preventing back injuries is a significant fire chief responsibility. The simple steps described above have proven their capability in such organizations as the Los Angeles Fire Department to substantially reduce the risk of back injury.

ADMINISTRATIVE DATA

LESSON TITLE: Back Injury Avoidance for Firefighters

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1. Training Objective
2. Lesson Outline
3. Student Outline

TRAINING OBJECTIVE

BACK INJURY AVOIDANCE FOR FIREFIGHTERS

Terminal Learning Objective: Given the typical work environment of the firefighter, the firefighter will demonstrate the ability to minimize risk of back injury through the application of four specific procedures designed to be integrated into the firefighter's job performance.

- a. Perform a lifting task using proper lifting procedures.
- b. Discriminate between loads to be lifted and those for which help is to be obtained.
- c. Describe and demonstrate an exercise regime to strengthen back muscles and thus prevent back injury.
- d. Describe job integrated actions for reducing back injury potential.

LESSON OUTLINE

BACK INJURY AVOIDANCE FOR FIREFIGHTERS

0000 Introduction

Terminal Learning Objective: Given the typical work environment of the firefighter, the firefighter will demonstrate the ability to minimize risk of back injury through the application of four specific procedures designed to be integrated in the firefighter's job performance.

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- d. Describe job integrated actions for reducing back injury potential.

Describe the significance of the back injury problem.

- a. Thirty percent of all injuries to firefighters.
- b. A leading cause of job disqualifying disabilities to firefighters.
- c. A costly problem Army-wide estimated at \$5,000,000 annually (all back injuries).

0003 Body

Learning Objective: Given a variety of objects typically encountered in the firehouse and firefighting environment, the student will--

- a. Demonstrate the ability to grasp and lift the object using proper lifting techniques as established in DOD 4145.19 (Appendix A).
- b. Determine correctly (given a subjective assessment of that individual's physical limitations) whether to attempt to lift an object or seek assistance.

NOTE: The correct lifting technique should be described using the handout provided with this lesson outline (Appendix B). Then the instructor should demonstrate proper lifting techniques on a variety of items to illustrate proper foot and hand placement and lifting techniques. Finally, all students should demonstrate hands-on proficiency. The standard of performance is correct technique on 95 percent of all lifting/pulling/pushing actions.

Learning Objective: Given the handout at Appendix C, demonstrate the back strengthening exercises as follows:

- a. Use proper warmup technique.
- b. Display correct form.
- c. Demonstrate knowledge of appropriate precautions for more advanced exercises.

NOTE: The instructor should discuss the value of exercise as a prevention technique for back injuries. He should then describe the various exercises using the handout at Appendix C as an aid. He should then demonstrate or use a student to demonstrate the correct technique. Each student should then perform the exercises. Be sure proper warmups are included. Stress precautions for the more advanced exercises per the handout.

The standard is correct technique on 95 percent of the exercises with no dangerous deviations from the prescribed procedures.

Learning Objective: Given the handout at Appendix D, demonstrate knowledge of the back injury avoidance procedures contained in the handout.

- a. Be able to state proper back care do's.
- b. Be able to state proper back care don'ts.
- c. Describe procedures for relief of back strain.
- d. Describe when to see a doctor for back pain.

NOTE: The instructor should review the contents of the handout using questions to the students as a primary means of review. Then he should show MF 20-13098, "To Last a Lifetime," to recap and stress key points from the overall presentation.

Conclusion:

Questions and Answers: Solicit student questions.

Summary: Recap key points related to lifting technique, getting assistance, back exercises, and back related do's and don'ts.

Close: Point out that backs belong to people and it is up to each of us to take care of our backs if we expect them to care for us for a lifetime.

Appendices

Appendix A

Extract from DOD DIR 4145.19-R-1, Storage and Warehousing Facilities and Services

Paragraph 6-114. Manual Handling

Proper Lifting Method. Persons who manually handle materials of any type will be instructed in the proper method of lifting heavy objects. The proper way to lift heavy objects from the floor is for the lifter to stand close to the load, with feet slightly apart and solidly placed. With knees bent, the object will be grasped firmly and lifted by straightening the legs, keeping the back as nearly vertical as possible. When lifting from an elevated surface, the object will be brought as close to the body as possible to avoid an unbalanced position. With straight back, the lifter will keep the load close to the body and will avoid carrying a heavy load a long distance without resting. Load will be carried in such a manner that full view is permitted. When lifting with another person, both persons should start and finish the lift simultaneously to prevent undue strain on either person. Persons with existing hernias, or those who have a history of previous back strains, will be assigned to duties that do not require heavy lifting. Lifting or lowering operations performed by several persons will be done on signal from one individual, and only after everyone's feet, hands, and other portions of the body are clear. Generally, mechanical means will be used for handling heavy objects.

Appendix B

Materials Handling and Storage

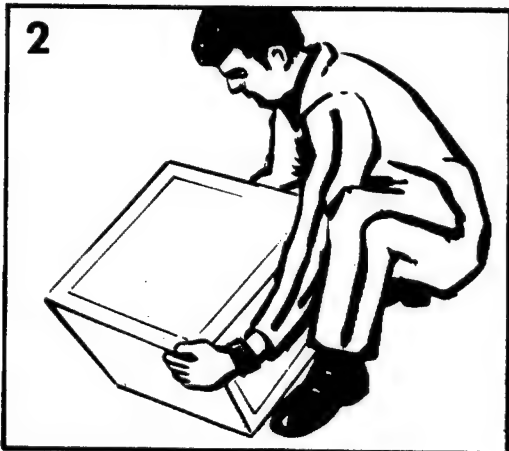
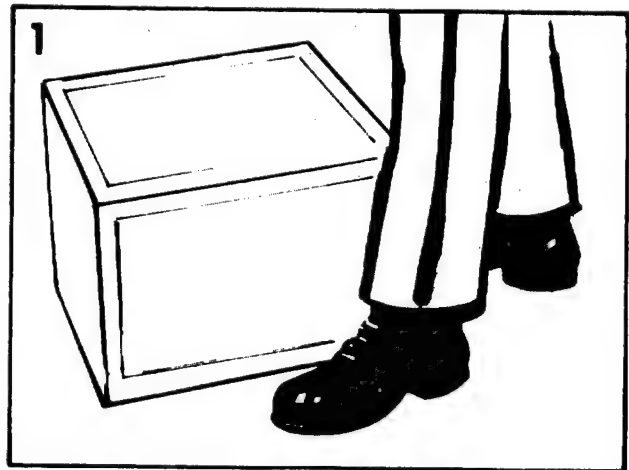
Proper Way to Lift

Lifting is so much a part of everyday jobs that most of us don't think about it. But it is often done wrong, with bad results: pulled muscles, disk lesions, or painful hernia.

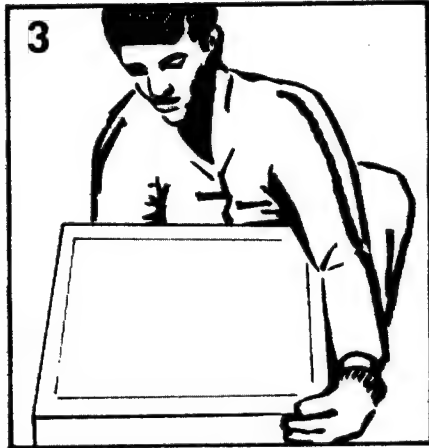
Here are six steps to safe lifting.

1. Keep feet parted--one alongside, one behind the object.
2. Keep back straight, nearly vertical.
3. Tuck your chin in.
4. Grip the object with the whole hand.
5. Tuck elbows and arms in.
6. Keep body weight directly over feet.

Feet should be parted, with one foot alongside the object being lifted and one behind. Feet comfortably spread give greater stability; the rear foot is in position for the upward thrust of the lift.

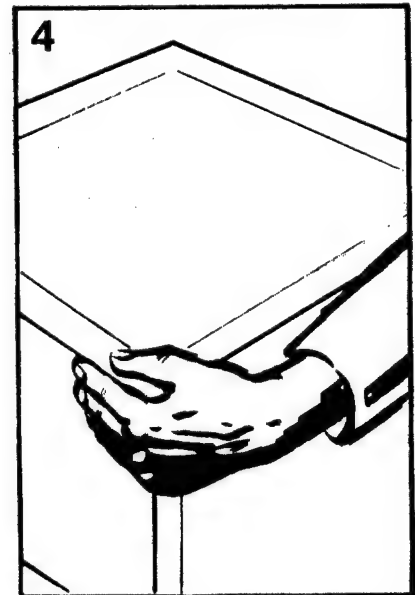


Back. Use the sit-down position and keep the back straight--but remember that "straight" does not mean "vertical." A straight back keeps the spine, back muscles, and organs of the body in correct alignment. It minimizes the compression of the guts that can cause hernia.



Arms and Elbows. The load should be drawn close, and the arms and elbows should be tucked into the side of the body. When the arms are held away from the body, they lose much of their strength and power. Keeping the arms tucked in also helps keep body weight centered.

Palm. The palmer grip is one of the most important elements of correct lifting. The fingers and the hand are extended around the object you're going to lift. Use the full palm; fingers alone have very little power. Glove has been removed to show finger positions better.



Chin. Tuck in the chin so your neck and head continue the straight back line and keep your spine straight and firm.

Body weight. Position body so its weight is centered over the feet. This provides a more powerful line of thrust and insures better balance. Start the lift with a thrust of the rear foot.



A well-conditioned back is a safer back

knee-to-chest lift



To help loosen up the back: 1. Assume starting position. 2. Raise right knee to chest. 3. Hold, count to five. 4. Repeat 5 times. 5. Repeat with left leg. 6. Repeat with both legs. NOTE: Don't lift legs with arms or hands.

nose-to-knee touch



To stretch hip muscles, strengthen abdominal muscles: 1. Assume starting position. 2. Raise left knee slowly to chest. 3. Pull left knee to chest with both hands. 4. Raise head, touch nose to knee. 5. Hold, count to five. 6. Repeat 5 times. 7. Repeat with right knee. NOTE: Keep lower back flat on floor.

partial sit-ups



To strengthen stomach and back muscles: 1. Start on back, knees bent. 2. Slowly raise head and neck to top of chest. 3. Reach hands forward, place on knees. 4. Hold, count to five. 5. Slowly return to starting position. 6. Repeat 5 times. NOTE: Keep low back flat on floor.

pelvic tilt



To strengthen back muscles and reduce posture problems: 1. Assume starting position. 2. Tighten buttock muscles. 3. Hold several counts. 4. Relax buttocks. 5. Repeat 5 times. NOTE: Keep lower spine flat against floor.

leg raise



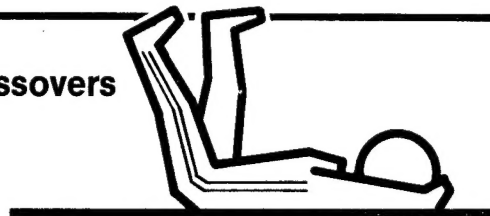
To help limber up, stretch hamstring: 1. Assume starting position. 2. Slowly raise right leg as high as you comfortably can. 3. Hold, count to five. 4. Return leg to floor. 5. Repeat 5 times. 6. Repeat with left leg. NOTE: Don't swing legs up fast or use hands to help.

leg stretch



To limber up tight hamstring muscles: 1. Sit down. 2. Tuck right leg back. 3. Reach to touch toe. 4. Repeat 5 times. 5. Repeat with left leg tucked back.

crossovers



ADVANCED EXERCISE (check with doctors) To limber and stretch abdominal, hip, back and hamstring muscles: 1. Assume starting position. 2. Raise both legs until balanced. 3. Slowly scissor legs up and down 10 times. 4. Slowly scissor back and forth (crossways) 10 times, alternating right leg over left, left over right. 5. Return knees to chest, then feet to floor. 6. Repeat once. NOTE: Keep good balance and lower back flat on floor.

hip extension



ADVANCED EXERCISE (Be sure to check with doctor) To stretch, strengthen hip, buttock and back muscles: 1. Lie on stomach as pictured. 2. Stiffen left leg straight. 3. Slowly raise leg from hip. 4. Return leg to floor. 5. Repeat 5 times. 6. Repeat steps 1-5 with right leg. NOTE: Don't lift pelvis to raise leg. Keep leg straight.

Take care of your back and it will take care of you.



Appendix D

HANDOUT

SAFE LIFTING TIPS

1. Crouch as close as possible to what you are going to lift.
2. Don't lift beyond your strength. Get help!
3. Get solid footing. Put your feet 8 to 12 inches apart.
4. Grip firmly with your fingers underneath the load whenever possible.
5. Keep your arms straight and your back as straight up-and-down as possible.
6. Lift gradually. Avoid jerky motions.
7. Lift by using the strong leg muscles. This takes strain off the back muscles.
8. Shift the position of your feet to avoid twisting motions.
9. Put things down by reversing the lifting methods.
10. Check your methods of lifting with your foreman when you must lift odd loads.